

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Figure 2. This sheet replaces the original sheet showing Figure 2. In this new sheet, Figure 2 has been amended to include references "2a", "2b", "2c", "2d", "2e", "2f" and "2g" to correspond to the various drawings within Figure 2.

REMARKS

Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested. Claims 1 and 16 have been amended merely to further recite the claimed invention without the intention of narrowing any of the claims. New claims 17-20 have been added merely to provide dependent claim support to independent claim 13 and find support throughout the specification and the original claims. No new matter has been added. Claims 1-20 are pending.

In Applicant's Remarks filed October 27, 2005, Applicant accidentally forgot to enclose the replacement Figure 2, which adds references 2a, 2b, 2c, 2d, 2e, 2f and 2g to the various drawings of Figure 2 so as to conform with the specification. Applicant has now enclosed the replacement Figure 2 and apologizes for the error.

In the previous Office Action, the drawings were objected to in view of the lack of a reference in the specification to the reference numeral 2 and because they allegedly fail to show reference 22 as described in the specification. Applicant submit that this is merely a typographical error corrected by the replacement Figure 2 enclosed herewith, and that it is clear from the specification, paragraph 49, that the two reference numerals should be 22 and 23 respectively. The 22 has become separated due to a software error, causing the confusion. Applicant respectfully requests that the Examiner approve the replacement Figure and withdraw the objection. For greater certainty, Applicant has amended paragraphs 50 and 51 of the specification to conform with the amendments to Figure 2.

The drawings are further objected to because of an alleged failure to show every feature of the invention specified in the claims. Applicant respectfully requests that the objections be withdrawn as explained as follows.

With respect to the objection to the "reflective integrator having a rectangular cross-section" as recited in claim 1, Applicant submits that at least Figure 2a schematically depicts an example integrator IN, which is shown as reflective and having a rectangular cross-section as clearly described in paragraph 48 of the specification. Applicant respectfully requests that the objection be withdrawn.

With respect to the objection to the "intensity distribution is asymmetric with respect to at least one of the X and Y axes" as recited in claim 1, Applicant submits that at least Figures 4 and 5 schematically depict an optical element constructed and arranged to redistribute an intensity distribution such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes. An example of such redistribution such that the

intensity distribution is asymmetric with respect to at least one of the X and Y axes is shown in, for example, the drawing of Figure 4 that schematically depicts the displacement of rays of an intensity distribution using mirrors 42, 43. Applicant respectfully requests that the objection be withdrawn.

With respect to the objection to "Page 13, paragraph 54 – optical element 50", Applicant submits that is not a reference to a claim feature which is allegedly not shown in the drawings. Accordingly, this objection is incomplete and erroneous and Applicant respectfully requests that the objection be withdrawn.

With respect to the objection to "said optical element ... in a pupil plane" as recited in claim 4, Applicant submits that the location of the element is perfectly clear from figures and the specification, in particular paragraph 52 which, in reference to an embodiment of the invention, explicitly states that the rotation is carried out in a pupil plane 21 downstream of the reflective integrator IN. The location of references 41-43 is clear from paragraph 52, Figure 2a and Figure 4. Likewise, the location of the turbine-like structure of Figure 5 is clear from, for example, paragraph 54 of the specification. Applicant respectfully requests that the objection be withdrawn.

Applicant respectfully submits that none of the amendments to the drawings or specification constitute new matter in accordance with 37 C.F.R. §1.121(f).

Claims 6 and 15 stand rejected under 35 U.S.C. §112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses the rejection, without prejudice.

With respect to claim 6, Applicant respectfully submits the claim language is clear. To a person skilled in the art, it would be apparent that "upstream" and "downstream" respectively refer to a position toward or away from the source of radiation. Just as moving upstream or downstream a river would be respectively moving toward or away from the source of the river. Thus, it should be clear that claim 6 refers to relationship between a particular distance at a position upstream of the optical element and a particular distance at a position downstream of the optical element. See, for example, paragraph 13 of Applicant's specification.

With respect to claim 15, Applicant respectfully submits the claim language is clear. To a person skilled in the art, it would be clear that the reference to the angle being variable in claim 15 simply identifies that the optical element can rotate an intensity distribution of a beam of radiation over more than angle between 5 and 85 degrees, rather than, for example, a

single angle between 5 and 85 degrees. Further, it would be clear that the optical element is set according to the value of said angle in claim 15 simply identifies that the optical element is configurable to rotate the intensity distribution according the value of the variable angle. Applicant submits that it would be too limiting to identify how particularly the optical element is set to the value of the angle. It is sufficient that the optical element is so set.

Accordingly, Applicant respectfully submits that the rejection under 35 U.S.C. § 112 of claims 6 and 15 should be withdrawn and the claims allowed.

Claims 1-4, 13-14 and 16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. patent application publication no. 2003/0151730 to Shinoda ("Shinoda"). Applicant respectfully traverses the rejection, without prejudice.

Applicant respectfully submits that the cited portions of Shinoda fail to disclose, teach or suggest a lithographic apparatus including an illumination system configured to condition a beam of radiation, the illumination system comprising, *inter alia*, an optical element, constructed and arranged to redistribute an intensity distribution exiting the reflective integrator such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes as recited in independent claim 1. Further, Applicant respectfully submits that the cited portions of Shinoda et al. fail to disclose, teach or suggest an illumination system including, *inter alia*, an optical element, constructed and arranged to redistribute an intensity distribution exiting the reflective integrator such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes as recited in independent claim 13. Further, Applicant respectfully submits that the cited portions of Shinoda et al. fail to disclose, teach or suggest a lithographic apparatus comprising, *inter alia*, an illumination system configured to condition a beam of radiation wherein the illumination system comprises, *inter alia*, an optical element, constructed and arranged to redistribute an intensity distribution exiting the reflective integrator such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes as recited in independent claim 16.

The Examiner refers to element 20 and paragraphs 19 and 63 of Shinoda et al. as allegedly disclosing, teaching or suggesting an optical element, constructed and arranged to redistribute an intensity distribution exiting the reflective integrator such that the intensity distribution is asymmetric with respect to at least one of the X and Y axes. Respectfully, those cited portions merely refer to a filter that adjusts a light intensity distribution, in particular so that peripheral transmittance is higher than central transmittance. Shinoda et al, paragraph 63. Applicant submits Shinoda et al. does not address the matter of redistributing an intensity distribution such that the intensity distribution is asymmetric with respect to at

least one of the X and Y axes. Indeed, Shinoda et al. discloses, teaches and suggest the opposite, namely symmetric redistribution. See Shinoda et al., paragraph 21 ("There may be plural transmittance correction filters for correcting the transmittance distribution with different correction amounts in a rotationally symmetrical manner.") To teach asymmetric redistribution, the Examiner relies on paragraph 19 of Shinoda et al. However, Applicant respectfully submits that paragraph 19 merely discloses that the adjusting mechanism of Shinoda et al. may adjust the light distribution with respect to a rotationally asymmetric component (as well as a rotationally symmetric component) but does not disclose, teach or suggest an optical component configured to actually redistribute an intensity distribution such that the intensity distribution is asymmetric. Shinoda et al. merely states that its adjusting mechanism will work for a light distribution that has an asymmetric component and simply fails to disclose, teach or suggest the different concept of redistribution in an asymmetric manner.

Applicant also respectfully submits that the cited portions of Shinoda et al. fail to disclose, teach or suggest an optical element constructed and arranged to rotate an intensity distribution of a beam of radiation over an angle between 5 and 85 degrees as recited in independent claim 14.

The Examiner refers to paragraph 82 of Shinoda et al. as allegedly disclosing, teaching or suggesting an optical element constructed and arranged to rotate an intensity distribution of a beam of radiation over an angle between 5 and 85 degrees. Respectfully, that cited portion of Shinoda et al. merely refers to a plate that is inclinably arranged and having a transmission control film that has a characteristic of transmittance of 93% at an incident angle of 0 degrees and transmittance of 98% at an incident angle of 5 degrees. Shinoda et al., paragraph 82. In other words, that cited portion of Shinoda et al. merely discloses a plate that may be inclined to variably control transmittance of radiation and simply does not disclose, teach or suggest an optical element arranged to rotate an intensity distribution, let alone arranged to rotate an intensity distribution over an angle of 5 to 85 degrees.

Therefore, for at least the above reasons, the cited portions of Shinoda et al. fail to disclose, teach or suggest all the features recited by independent claims 1, 13, 14 and 16. Claims 2-4 depend from claim 1 and are, therefore, patentable for at least the same reasons provided above related to claim 1, and for the additional features recited therein. As a result, Applicant respectfully submits that the rejection under 35 U.S.C. §102(e) of claims 1-4, 13-14 and 16 in view of Shinoda et al. should be withdrawn and the claims allowed.

Claims 5 and 7-10 stand rejected under 35 U.S.C. §103(a) as being obvious in view of Shinoda further in view of U.S. patent no. 5,859,707 to Nakagawa et al. ("Nakagawa et al."). Applicant respectfully traverses the rejection, without prejudice.

Applicant respectfully submits that the comments above with respect to Shinoda regarding claim 1 applies equally to claims 5 and 7-10 which depend from independent claim 1. Furthermore, the cited portions of Nakagawa et al. fail to overcome any of the deficiencies of Shinoda. For example, the cited portions of Nakagawa et al. fail to disclose, teach or suggest a field defining element as claimed in claim 1, an element configured to define the illuminating field off-axis with respect to the optical axis of the illumination system.

Because the cited portions of Shinoda and Nakagawa et al. taken singly or in any proper combination, fail to disclose, teach or suggest the claimed subject matter of claims 5 and 7-10, Applicant respectfully requests that the rejection under 35 U.S.C. §103(a) of claims 5 and 7-10 based on Shinoda in view of Nakagawa et al. be withdrawn and the claims allowed.

Claim 11 stands rejected under 35 U.S.C. §103(a) as being obvious in view of Shinoda and Nakagawa et al. and further in view of U.S. patent no. 6,102,554 to Willson et al. ("Willson et al."). Applicant respectfully traverses the rejection, without prejudice.

Applicant respectfully submits that the comments above with respect to Shinoda and Nakagawa et al. regarding claim 1 applies equally to claim 11 which depends from independent claim 1. Furthermore, the cited portions of Willson et al. fail to overcome any of the deficiencies of Shinoda. For example, the cited portions of Willson et al. fail to disclose, teach or suggest a field defining element as claimed in claim 1, an element configured to define the illuminating field off-axis with respect to the optical axis of the illumination system.

Because the cited portions of Shinoda, Nakagawa et al. and Willson et al. taken singly or in any proper combination, fail to disclose, teach or suggest the claimed subject matter of claim 11, Applicant respectfully requests that the rejection under 35 U.S.C. §103(a) of claim 11 based on Shinoda in view of Nakagawa et al. and further in view of Willson et al. be withdrawn and the claim allowed.

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

MULDER ET AL. -- 10/816,170
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All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975 under our order no. 081468/0309024. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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